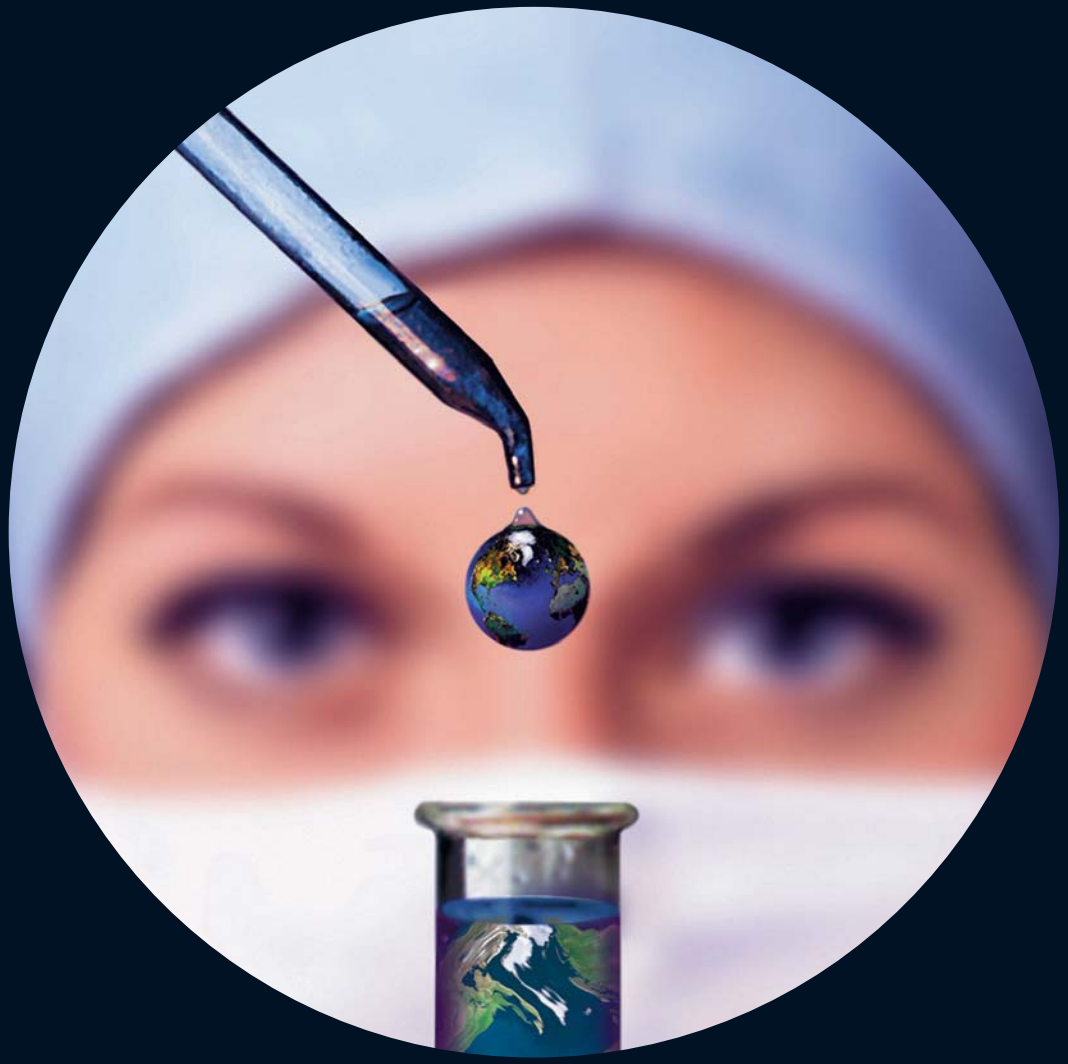
Working with NASA's Goddard Space Flight Center:

THE Technology Commercialization Process

Contents



The primary goal of the technology commercialization process at NASA's Goddard Space Flight Center is to encourage broader utilization of Goddard-developed technologies in the American industrial and academic communities. This information package is designed to expedite the process of successfully doing business with Goddard. It contains answers to frequently asked questions, steps to initiate the licensing process, and an overview of the various ways to effectively partner with Goddard. We welcome the opportunity to present our technology and extend an invitation for you to partner with NASA's Goddard Space Flight Center. Together we can keep America the international leader in technology commercialization.

How to Work with Goddard

Industry, academia, and other government agencies can work with Goddard in several ways. Through these working relationships, organizations can gain access to Goddard-developed technology, integrate the technology into their product line or research, and/or further develop the technology. These working relationships are usually formalized as a patent license, copyright license, and/or Space Act Agreement. As suggested in the table on page 3, Space Act Agreements are flexible agreements that involve joint development, where both parties work in their own facilities. Joint work also can be done under contract or a cooperative agreement as an integral part of supporting Goddard science missions where technology has potential commercial uses.

Partnership Agreements

There are several options for developing a working relationship with Goddard. The table outlines some of the more popular options. Sample licensing, Space Act, and other agreements are available from the Technology Commercialization Office upon request.[1]

Option	Agreement with Goddard	Steps to Take
License Goddard technology	Patent or copyright license	Submit patent or copyright license application (see page 10) to the Technology Commercialization Office[1]
Work with Goddard to develop a viable product based on a Goddard technology	Space Act Agreement for joint development[2]	Submit Space Act Agreement and proposed commercialization plan (see page 13) to the Technology Commercialization Office
Work with Goddard in a shared-resource project that supports and stimulates advanced research and technology developments	Cooperative agreement	Respond to Cooperative Agreement Notice (CAN) or submit unsolicited proposal to the Bid Office[3]
Use unique Goddard facilities for cooperative and/or individual research	Space Act Agreement	Contact the Goddard facility manager and/or researcher (Technology Commercial-zation Office can facilitate contact)

Notes:

[1] *Technology Commercialization Office, NASA Goddard Space Flight Center, Mail Stop 750, Greenbelt, MD 20771; see page 17 for phone numbers.*

[2] *A Space Act Agreement can be designed as either nonreimbursable or partially or fully reimbursable, indicating the degree to which the partner will refund NASA for its contributions to the effort.*

[3] *Bid Office, NASA Goddard Space Flight Center, Mail Stop 213, Greenbelt, MD 20771; (301) 286-6575.*

Questions & Answers about Working with Goddard

This section answers some of the basic questions about technology commercialization, patent licensing, and privacy issues. Feel free to contact the Technology Commercialization Office for more information (see page 17 for contact information).

Goddard's Technology Commercialization Program

Why is it important for Goddard to commercialize its technology?

The U.S. Congress and the NASA Administrator are putting great emphasis on transferring NASA-developed technology and expertise to U.S. industry to increase U.S. industrial competitiveness, create jobs, and improve the balance of trade. This emphasis is being placed on commercialization of technology for mission applications and for dual-use applications with nonaerospace industries.

Will Goddard conduct research to assist an organization in solving its technical problems or improving its products?

If Goddard has technology available that would be useful, the Technology Commercialization Office would be pleased to discuss its possible applications. As one option, a joint development effort could be conducted if NASA has interest in the research and if it has unique facilities and capabilities to contribute.

Available Technologies

Does Goddard have any publications that describe technologies that are available for license or joint development?

Goddard publishes various formal technical reports describing research work conducted at its facilities. The Technology Commercialization Office has one-page descriptions, called Technology Opportunity Sheets, of many Goddard technologies available for transfer. The office also publishes a technology transfer report outlining its annual technology commercialization activities, opportunities, and successes. These and other related publications can be obtained via the Internet (http://techtransfer.gsfc.nasa.gov).

Whom do I contact to receive further information on a particular Goddard technology?

Contact the Technology Commercialization Office staff member for your industry or research focus (see page 17).

Space Act Agreements

How is a Space Act Agreement different from a Cooperative Research and Development Agreement (CRADA)?

They are essentially the same. Authorized by the National Aeronautics and Space Act of 1958 (as amended), Space Act Agreements are flexible arrangements that allow NASA to work cooperatively with industry and academia. The Technology Innovation Act of 1980 authorizes other government research organizations, which did not have similar provisions in their charters, to use CRADAs.

How can I enter into a cost/resource-sharing arrangement with Goddard for research and technology development?

Cooperative agreements with profit-making firms are authorized and allow this type of arrangement. Contact the Technology Commercialization Office for further information (see page 17).

Can collaborations begin before the Space Act Agreement is officially signed?

Certain activities (e.g., non-disclosing technical discussions) can occur prior to signing the agreement.

What can Goddard contribute and what can my organization contribute (i.e., money, man-hours, materials, facilities, and services) under a Space Act Agreement?

Goddard can contribute nearly all of the items mentioned above; it cannot transfer appropriated funds to the partner. The partner can contribute all of the items mentioned above. The contributions of each party are negotiated by Goddard and the partner.

Who receives patent rights to technologies developed under a Space Act Agreement?

Industry or academia may retain the rights if the technology is invented solely by its employees. Goddard may retain the rights if the technology is invented solely by Goddard employees. A jointly owned patent will result if employees of each party invent the item. In any event, patent rights will be spelled out in the Space Act Agreement or negotiated in accordance with applicable law.

Patent Licenses

Will Goddard grant exclusivity for a particular technology?

An organization may apply for an exclusive, an exclusive field-of-use, or a nonexclusive license (see page 10). Exclusive rights to a technology can be licensed depending on how many parties are interested in the technology and depending on the license application. Other factors taken into account are the commercialization plan (see page 13) and the organization's demonstrated wherewithal to carry it out.

What happens if another organization is interested in the same technology that I want to commercialize?

As stated earlier, there are a number of possible licensing agreements: nonexclusive, exclusive, co-exclusive, exclusive in a particular field of use or in a geographic region, and various combinations of these. Goddard requires interested parties to submit a commercialization plan (see page 13) for the particular technology. Goddard uses this plan to determine which licensing arrangement will be best for everyone involved.

How long does the patent licensing process take? How much will it cost me in up-front money?

The process generally takes about 3 to 4 months after receipt of application for a nonexclusive license. Exclusive licenses take longer and are highly dependent on the complexity of the application. The time frame for exclusive licenses includes a mandatory waiting period of 60 days, during which time a member of the public can file a written objection. Up-front fees generally are set according to the value of the technology and are negotiable.

What percentage in royalties does Goddard require under a licensing agreement?

The percentage in royalties to be paid to Goddard under a licensing agreement is negotiable depending on a number of factors, including the type of license issued (i.e., exclusive or nonexclusive). It is likely to be between 2 percent and 8 percent of sales.

Privacy Issues

Are discussions with Goddard personnel kept confidential? What about the Freedom of Information Act (FOIA)?

Goddard personnel are obligated by law to keep all proprietary information confidential if identified as such. Trade secret information revealed to Goddard in the process of developing, negotiating, and signing a Space Act Agreement is exempt from FOIA.

Can industry, academia, or individuals use Goddard facilities? Is there a charge for the usage? Must the data resulting from the work in a Goddard facility be made public?

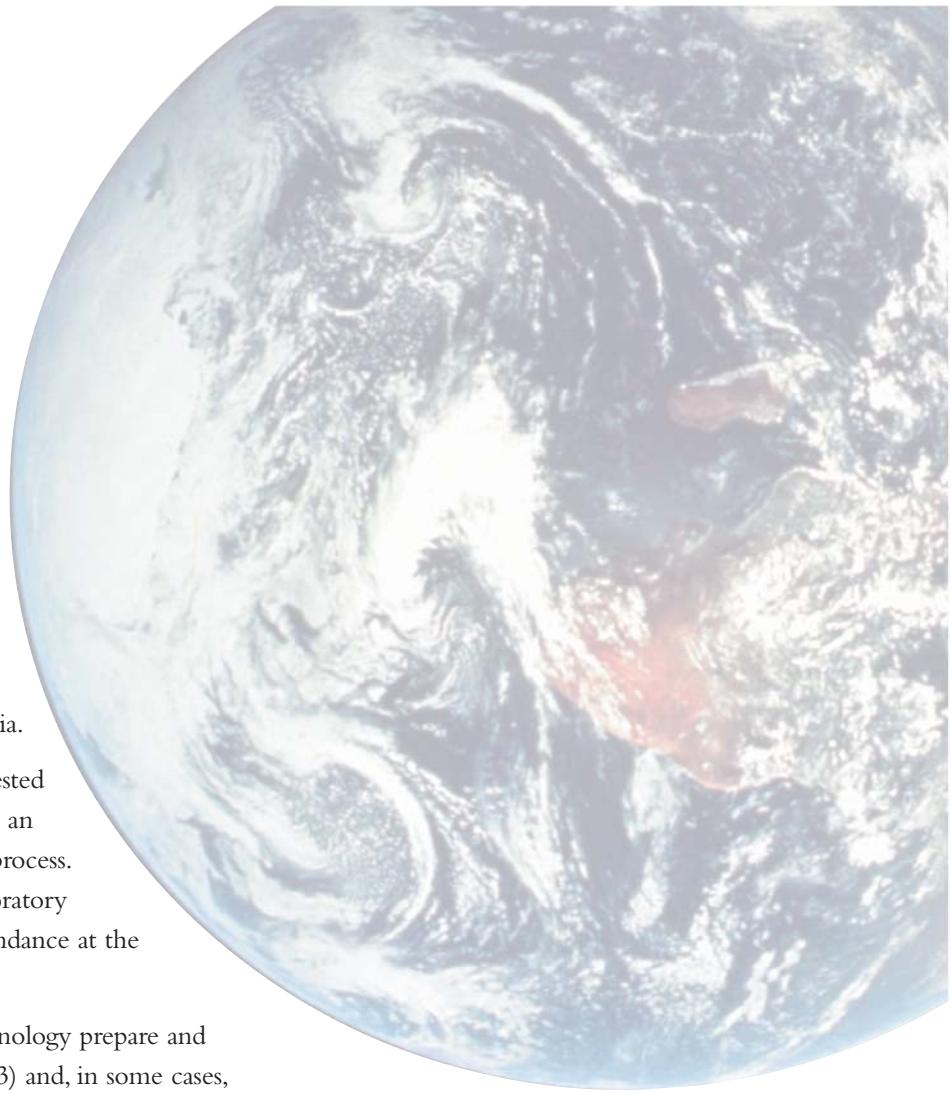
Goddard facilities can be used on a space-available basis. Should the research to be conducted be of interest to NASA, Goddard may cover some of the expenses; however, the results could eventually be publicly released by NASA. If the user pays the total cost associated with use of the facility, the data will not be made public unless otherwise agreed to.

The Commercialization Process

Goddard has developed a formal process for selecting partners for technology commercialization projects. This commercialization process establishes a fair and equitable selection procedure and improves the odds that the most qualified partner will be selected.

Commercialization Overview

1. Goddard markets its available technology via Technology Opportunity Sheets (see page 5), trade shows, direct mailings, and other venues to solicit commercialization interest from industry and academia.
2. Goddard might hold a Technology Briefing for interested parties, providing information on the technology and an overview of NASA's patent and copyright licensing process. The briefing is publicized online, in the Federal Laboratory Consortium's *Newslink*, and via mailings. (Note: Attendance at the briefing is not a requirement for consideration.)
3. Organizations interested in commercializing the technology prepare and submit proposed commercialization plans (see page 13) and, in some cases, license applications (see page 10).
4. Goddard reviews the proposed commercialization plans, selecting the best based on established evaluation criteria (see page 14).
5. The selected partner negotiates the patent or copyright license agreement and/or Space Act Agreement with Goddard.
6. Licensing agreements are signed by NASA's General Counsel and the partner; Space Act Agreements are signed by the Goddard Center Director (or designee) and the partner. These signatures formally establish the project/partnership.



NASA's Patent Licensing Program

NASA owns over a thousand patents and patent applications that protect inventions in hundreds of subject matter categories. NASA makes these inventions available to industry through its Patent Licensing Program, which is administered by NASA's Field Centers on behalf of the NASA Office of General Counsel, NASA Headquarters, Washington, D.C.

Legal Requirements

NASA has the authority to grant licenses on its domestic and foreign patents and patent applications pursuant to 35 U.S.C. §§ 207-209. NASA follows the regulations set forth in 37 C.F.R. § 404.

All NASA licenses are individually negotiated with the prospective licensee, and each license contains terms concerning commercialization (practical application), license duration, royalties, and periodic reporting. NASA patent licenses may be exclusive, partially exclusive, or nonexclusive.

Information on NASA Patents

Information on NASA patents and patent applications is available from:

- Patent and technical literature searches
- *NASA Tech Briefs*
- NASA Regional Technology Transfer Centers
- NASA Field Center Technology Transfer/Commercialization Offices (For Goddard technologies, see the Techology Opportunities section of http://techtransfer.gsfc.nasa.gov)
- NASA Field Center Office of Patent Counsel
- NASA Headquarters Office of General Counsel
- NASA TechTracS (http://technology.nasa.gov)

How to Apply for a Patent License

If you wish to apply for a patent license for a Goddard technology, send an application to Goddard's Technology Commercialization Office (see page 17). At a minimum, the application should contain the following information (37 C.F.R. § 404.8):★

A. The patent application serial number, the patent number, or the NASA case number of the invention for which a license is desired. When possible, the title of the invention and patent issue date also should be given.

B. The type of license being applied for (i.e., exclusive, partially exclusive, or nonexclusive) and any desired limitations (e.g., field of use, geographic).

C. The name and address of the person, company, or organization applying for the license. Where applicable, give citizenship, place of incorporation, and the name of the parent corporation.

D. The name, address, and telephone number of the applicant's representative. The representative should have authority to conduct licensing negotiations.

E. A description of the nature and type of applicant's business. This description should include any products or services that the applicant has successfully commercialized and the approximate number of people employed by the applicant.

F. An explanation of how the applicant became aware of the invention sought to be licensed.

G. A statement as to whether the applicant is a small business, as defined in 37 C.F.R. § 404.3(c).

H. A detailed description of the applicant's plan for developing and/or marketing the invention. At a minimum, the plan should include:

- A statement of anticipated investment capital and other resources necessary to bring the invention to practical application. This statement should include the nature, amount, and timing of such anticipated investments.
- A statement indicating the applicant's capability and intention to fulfill this plan for development and/or marketing. This statement should include information pertaining to the applicant's manufacturing, marketing, financial, and technical resources. A balance sheet and an income statement also may be requested. The statement also should include a timeline of key steps or milestones required to bring the invention to practical application.
- A statement of the fields of use in which the applicant intends to practice the invention.
- A statement of the geographic areas in which the applicant intends to manufacture any products embodying the invention and the geographic areas where the applicant intends to use or sell any products embodying the invention.

I. A listing of licenses, if any, that were previously granted to the applicant under any federally owned inventions.

J. A statement describing (to the applicant's best knowledge) the extent to which the invention is being practiced by private industry, government, or both and the extent to which the invention is commercially available.

K. Any other information the applicant believes will support a determination to grant the requested license to the applicant.

★Note: In addition to these minimum requirements, a commercialization plan also may be requested (see page 13).

Processing License Applications

Once an application has been received and reviewed by the Technology Commercialization Office, Goddard's Office of Patent Counsel makes a preliminary recommendation to NASA's Office of General Counsel. This recommendation will be either:

- To grant the license as requested
- To grant the license with modification after negotiation with the licensee
- To deny the license

For exclusive and partially exclusive licenses, an additional step is required before making a final determination to grant a license. This step involves placing a notice of a prospective license (identifying the invention and the prospective licensee) in the *Federal Register* and providing the opportunity for written objections to be filed within a 60-day period. Any objections are taken into consideration in making the recommendation to the NASA Associate General Counsel (Intellectual Property).

Once a final determination is made by the NASA Associate General Counsel (Intellectual Property) to grant a license, final negotiations take place between the prospective licensee and NASA.

The negotiation of the license fee is an integral part of the entire licensing process and is determined in light of a variety of considerations.

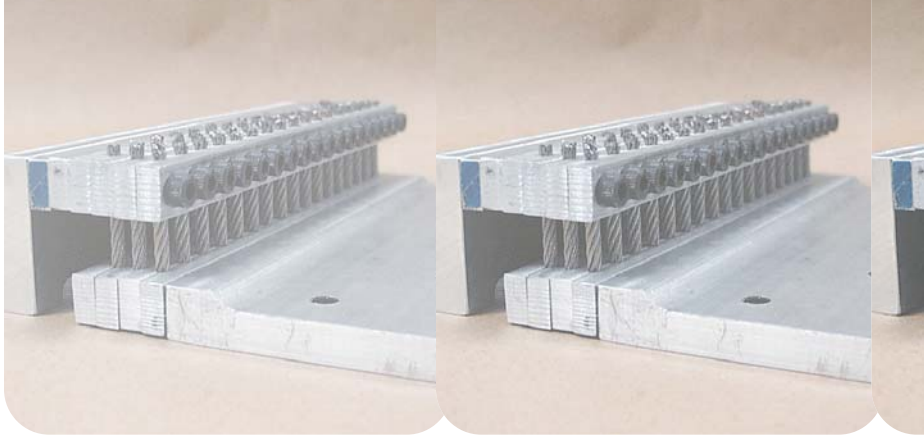
How to Prepare a Commercialization Plan

In preparing a commercialization plan for a Goddard technology, you should provide the Technology Commercialization Office with the following information:

1. The nature of the company's business, identifying products and services that have been successfully commercialized or that are proposed for commercialization
2. A copy of a financial report (e.g., Dun & Bradstreet report) or your company and/or your company's latest annual report, if available
3. A statement indicating whether your company qualifies as a small business firm as defined in 37 C.F.R. § 404.3(c)
4. A 3- to 5-year pro forma income statement for the proposed product, including number of units per year, average price per unit, direct and indirect expenditure estimates, and other relevant data
5. Proposed royalty rates, including up-front fees, yearly minimums, and milestones

Evaluation Criteria for Commercialization Projects

Goddard considers a variety of factors when evaluating license applications or commercialization plans.

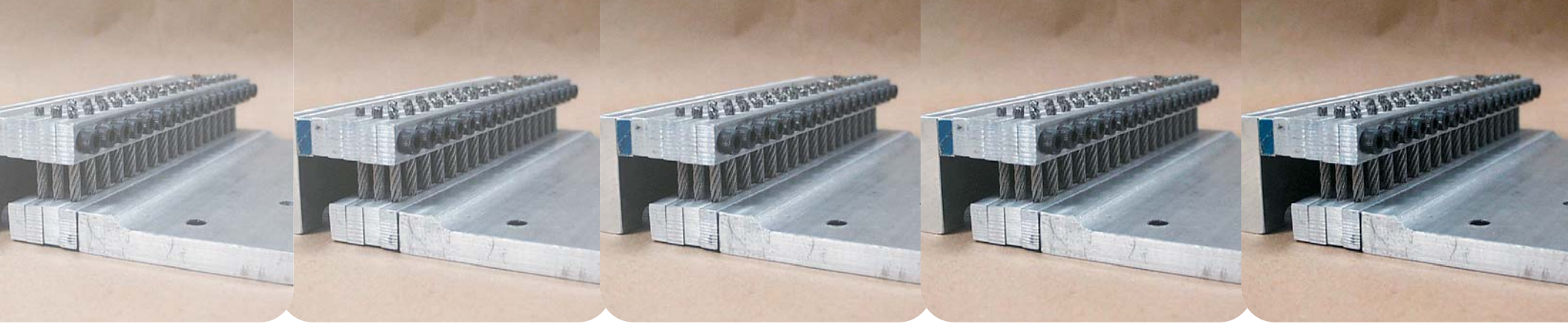


Technical Factors

- Understanding of the technology
- Technical capabilities and facilities of the partner
- Understanding of the technical challenges and constraints, and a plan for solving them
- Available and accessible technical and engineering skills
- Assessment of the design changes necessary to achieve commercialization

Business Factors

- Goals of project agree with the partner's overall mission and goals
- Demonstration of the partner's strength in the field of technology
- Clear identification of existing and potential customers
- Characterization of the market, including the size and an estimate of penetration
- Competitive advantage and position
- Clear work/business plan, including a well-defined roadmap to commercialization
- Demonstrated development, manufacturing, and marketing capabilities
- Financial condition of the partner



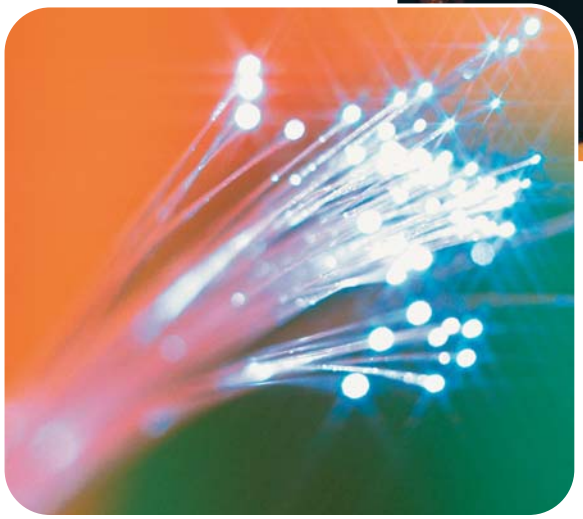
Management Factors

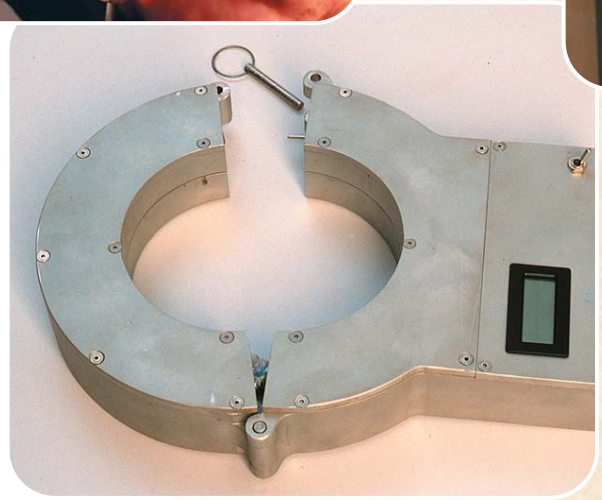
- Leadership and commitment of management
- Well-defined project management, schedule, and resources
- Reasonableness of proposed effort, including time and resource estimates
- Strengths and capabilities of management team, including past experience
- Record of successful and unsuccessful technology development leading to commercial products

Economic Impact

- Financial benefit to partner and NASA
- Number and quality of jobs expected to be created
- Impact on consumers, and taxpayer benefits
- Time to commercialization impact
- Expectations for exportation of product
- Financial and organizational impact on partner
- Economic impact in partner's local community

Goddard's Technology Commercialization Office





The Technology Commercialization Office leads Goddard's technology transfer activities. The office determines the viability and marketability of new Goddard technologies and works with U.S. companies and academia to facilitate the commercialization of these technologies.

Outreach and Integration Staff

Outreach and integration staff market those Goddard-developed technologies that are available for commercialization and publicize technology commercialization successes. These efforts are conducted using Technology Opportunity Sheets, *NASA Tech Briefs, Commerce Business Daily, NASA Select,* the Internet, news releases to and articles in trade journals, and presentations at conferences.

(301) 286-5810
outreach@tco.gsfc.nasa.gov

Patent Counsel

Goddard's Office of Patent Counsel prepares patent applications and other patent-related documents, and reviews Space Act, license, and nondisclosure agreements. The Office also helps determine the patent potential of new Goddard technologies and oversees intellectual property issues.

(301) 286-7351
patent@tco.gsfc.nasa.gov

Small Business Innovative Research

Extra efforts to involve smaller businesses are made under the auspices of the Small Business Innovation Research (SBIR) program. The SBIR program offers grants to small businesses to meet federal research and development needs. A similar program—the Small Business Technology Transfer (STTR) program—involves teams of small businesses and research institutions conducting research jointly.

(301) 286-5836
sbir@tco.gsfc.nasa.gov

Commercial Technology Staff

Commercial technology staff work with industry, academia, and other government agencies to transfer Goddard technologies and to help these organizations solve their technical problems that fall in Goddard's six areas of expertise. Staff also negotiate agreements between Goddard and these partners.

Environmental Systems
(301) 286-1098
environment@tco.gsfc.nasa.gov

Guidance, Navigation, and Control
(301) 286-2198
navigation@tco.gsfc.nasa.gov

Information Systems/ Communications
(301) 286-0561
information@tco.gsfc.nasa.gov

Optics
(301) 286-2642
optics@tco.gsfc.nasa.gov

Sensors and Detectors
(301) 286-5979
sensors@tco.gsfc.nasa.gov

Thermal and Cryogenics
(301) 286-5169
thermal@tco.gsfc.nasa.gov

For More Information

NASA Goddard Space Flight Center
Technology Commercialization Office
Building 11, Room C1
Mail Stop 750
Greenbelt, MD 20771

Telephone: (301) 286-5810
Facsimile: (301) 286-0301
E-mail: techtransfer@tco.gsfc.nasa.gov
Internet: http://techtransfer.gsfc.nasa.gov

NASA
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Technology Commercialization Office

Since its inception, Goddard has pursued a commitment to technology transfer and commercialization. For every space technology developed, Goddard strives to identify secondary applications for U.S. companies, universities, and government agencies.

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contact:

Environmental Systems
(301) 286-1098
environment@tco.gsfc.nasa.gov

Guidance, Navigation, and Control
(301) 286-2198
navigation@tco.gsfc.nasa.gov

Information Systems/ Communications
(301) 286-0561
information@tco.gsfc.nasa.gov

Optics
(301) 286-2642
optics@tco.gsfc.nasa.gov

Sensors and Detectors
(301) 286-5979
sensors@tco.gsfc.nasa.gov

Thermal and Cryogenic Technology
(301) 286-5169
thermal@tco.gsfc.nasa.gov